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Bacterial Canker of Tomato in Mississippi

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Bacterial canker of tomato is the most recent disease which has confronted the truck growers of Mississippi. The first authentic report to the State Plant Board was made in 1925 and 1926 by H. H. Wedgworth. It is probable that a few scattered cases of bacterial canker have occurred in previous years but little attention was given the disease until 1929 and 1930. Canker is known to have appeared on less than six farm locations in Copiah County during 1927-1929. The highest loss was noted on the farm of W. S. Graves at Crystal Springs in 1929. Figures from the survey of 1930 show that 225 fields were inspected for canker in Copiah and Hinds Counties. Fifty-four out of 136 fields examined in Copiah County had canker while 42 of the 89 fields in Hinds County had the disease. Many other fields showed the disease present, yet it is estimated that less than five per cent of the tomato fields in that area had bacterial canker. The territory affected lies within a ten mile radius of Crystal Springs and Terry. That this disease may be very dangerous in the Mississippi tomato crop has been shown quite clearly by its effects in 1929 and 1930. During a dry season, the losses may be small. Lack of rainfall in 1930 reduced slightly the amount of marketable fruit but this lack of moisture also prevented the spread of the bacteria to the fruit. While the loss of diseased plants varied from 5% to 90% in some fields, the crop in almost every case would have been destroyed in a normal season with an average rainfall. In 1929, in one case the production from nine acres of tomatoes was much less than one hundred crates per acre where the normal yield should have been four hundred to six hundred crates. Of the crates harvested, many crates contained specked fruits which were a distinct loss at the terminal market. As much as \$300 to \$600 per acre may be lost when the figures are based on cost of labor, fertilizer, packing material, equipment and the expected sale of fruit at seventy-five cents per flat crate. When market prices are higher the loss can reach \$800 or more. While

losses may occur in the seedling stage, the most severe loss to the grower comes after all expenditures have been made on the crop. Death of the mature plant with a loss of 25% to 100% of its fruit and the specking of the green fruit at harvest time constitute the major injuries from the attack of this bacterial organism. Overwintering of the bacteria in the soil for a long number of years may result in continued loss of the crop or necessitate a change in crop rotation.

It is an established fact that the bacteria which cause canker of tomatoes live on the seed and just beneath the seed coat. Recent work has shown that ordinary disinfectants do not control the bacteria within the seed. It was necessary in the survey of this disease in May and June, 1930, to determine the use of seed disinfectants, the source of all seed, the sanitation of old hotbeds, the use of new beds and new coldframes, crop rotation, and such facts as might indicate whether the bacteria were present in the soil or in the tomato seed distributed for the 1930 crop. By inspection of fields in which only one tomato variety was growing the presence or absence of canker was determined. Of the 85 fields inspected in Copiah County having one variety present, 28 had canker. Twenty fields with canker came from one northern seed company. Three fields came from the second northern source, while one field from a third northern firm whose seed fields had been inspected in 1929 had canker present. The latter case could not be checked since the variety was not found elsewhere in the county. The second source previously mentioned has supplied seed, a part of which grew canker-free plants and a part produced plants with bacterial canker. The latter circumstance may be due to the seed being saved from disease-

Fig. 3. Bacterial canker or birdseye spots on fruit of the Gulf State Market variety. These spots developed mostly from wind and rain-blown bacteria lodging on the green fruit. Infection occurred within five to seven days with a loss of nearly eighty per cent of the crop. The light-green halo of water-soaked tissue can be seen on the outer edge of many spots. Each spot at first has a light corky-brown color in the center which later turns to a darker brown. The severely spotted skin may dry out and crack open. (Photo by T. D. Persons, Farm of W. S. Graves, June 6, 1929.)



free and diseased tomatoes which were grown in different fields. The first source of out-of-state seed provided diseased or contaminated tomato seed in nearly every field where the grower had used this seed. In all mixed varietal stands, the plants were subject to attack by this organism whenever this diseased seed was used. Homegrown tomato seed did not show any canker in the 1930 crop.

The control of bacterial canker is largely through the use of disease-free seed. The tomato grower should produce his own seed, thereby knowing its freedom from the canker disease, or a statement from the seedman should be requested to signify that the seed was produced in canker-free fields. When canker has been found on a farm, the grower should start the seed bed in a new location using new frames and sash. Careful sanitation with the use of new woods dirt, new compost and water from a deep well free of surface waters should insure a healthy lot of seedlings. The cold frame plants should not be grown where the canker has been found. Tomatoes should not be planted on the same land for several years after bacterial canker was observed. It is possible that a two or three year rotation may be enough to avoid this disease but little is known as to the number of years these bacteria will live in the soil. Removal of the diseased plants from the field is not always a successful control measure unless the number of infected plants is very small.

For the information of the tomato grower, a list of seed sources which provided canker-free seed for the 1930 crop may be secured from the State Plant Board. This list is compiled from field data and in no way can these sources be recommended by the Board to distribute canker-free seed in 1931. Freedom from the canker bacteria can be reasonably assured only when the growers demand official inspection and certification of the seeds in the states from which they originated.

Phytopathologists Meet in Mississippi

The southern division of the American Phytopathological Society held its annual meeting in Mississippi June 12-16, consisting of a tour through the southern half of the state. Visits were made to the extensive trucking area around Crystal Springs and Hazlehurst, to some large peach plantings, and to the pecan and Satsuma orange section along the Coast. Among those in the party were representatives from Florida, Georgia, Arkansas, Alabama, Illinois and Mississippi, besides several specialists from the United States Bureau of Plant Industry at Washington.

Special interest was shown in the new bacterial canker disease of tomato, which has caused severe losses to truckers in the Copiah County tomato area. Specimens of the new phony peach disease were observed in a large orchard near Terry. A demonstration of pecan orchard dusting, visits to the large factory of the American Pickle Company at Wiggins, to the South Mississippi Experiment Station at Poplarville, and to several nurseries along the route, were high points in the tour. L. E. Miles and L. M. Fenner, pathologists of the State Plant Board, were hosts and in charge of the tour.

American Foulbrood in New Territory

The apiary inspection report in this issue shows the largest number of American foulbrood colonies found in Mississippi in several years. Three new infections were found during the past winter and spring in Quitman, Copiah and Forrest counties. The source of the infections could not be definitely determined. A few years ago foulbrood was apparently eradicated from a locality in Quitman County several miles from the diseased apiary found this spring, which was clean at that time. In Forrest County the single infection was apparently due to honey shipped in from some other state. The infection in Copiah County was locally attributed to diseased honey shipped there from another state for the manufacture of ant poison. The infection in Warren County resulted from the illegal move-

ment of diseased bees from Copiah County before the disease was discovered there. The cases in Noxubee County were apparently due to the use of infected equipment from diseased apiaries a few years before. American foulbrood has been present in Washington County for many years and in spite of prompt and careful burning a few colonies still show disease each year.

European foulbrood is believed to be restricted in Mississippi to the Delta section and to a small area in Wayne County. No other infections are known in the State. Beekeepers have been advised about controlling European foulbrood, but no eradication measures have been attempted. This is in line with the procedure followed in other states where this disease occurs.

All of the American foulbrood colonies found this season were promptly burned. The apiaries are being re-inspected at frequent intervals and it is hoped that they will show no disease by the end of the year.

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Sweet Potato Certification Regulations Changed

A public hearing was held by the State Plant Board on June 28 at A. and M. College for the purpose of discussing proposed changes in the sweet potato certification system.

A considerable number of growers, representing several counties, attended the meeting and expressed their opinions freely on the proposed changes. They voted unanimously in favor of retaining the present compulsory system instead of a voluntary system which would permit the sale of uncertified seed also. Several stated that any slackening in the regulations would be a backward step. They also seemed unanimously in favor of having two grades of seed potatoes and plants, one grade with no disease whatever, and a second grade in which a small amount of disease would be tolerated. Nearly all those present also expressed themselves in favor of raising the requirements for certification and making them more strict.

The State Plant Board has considered the recommendations of the growers and adopted them as follows: